IN THE CLAIMS

1-6. (canceled)

7. (currently amended) The apparatus of claim ~~6~~178, wherein the transitions of the merge synchronization signal are substantially coincident with the ends of the blanking periods.

8. (currently amended) The apparatus of claim ~~6~~178, wherein the merge synchronization signal includes transitions that lead the ends of the blanking periods.

9. (canceled)

10. (currently amended) The apparatus of claim ~~9~~179, further comprising:

a respective local synchronization unit coupled to each set of graphics processors and to each local merge unit; and

a core synchronization unit coupled each local synchronization unit and to the core merge unit,

wherein the core merge unit is operable to produce the merge synchronization signal used by the core synchronization unit and at least some of the local synchronization units to permit the respective sets of graphics processors to synchronously release the frame image data from the respective local frame buffers to the respective local merge units, and to permit the respective local merge units to synchronously release the local combined frame image data to the core merge unit.

11. (currently amended) The apparatus of claim ~~9~~179, wherein the control processor is operable to instruct the graphics processors and the one or more merge units to operate in one or more modes that affect at least one of (i) timing relationships between when image data are rendered, when frame image data are released from respective local frame buffers, and when frame image data are merged; and (ii) how the frame image data are merged to synchronously produce the combined frame image data.

12-109. (canceled)

110-114. (canceled)

115. (currently amended) The method of claim ~~114~~180, wherein the transitions of the merge synchronization signal are substantially coincident with the ends of the blanking periods.

116. (currently amended) The method of claim ~~114~~180, wherein the merge synchronization signal includes transitions that lead the ends of the blanking periods.

117-134. (canceled)

135. (currently amended) The method of claim ~~134~~182, wherein the flip animation mode further provides that the at least two graphics processors complete rendering the image data into the respective frame buffers prior to the ends of an integral number of blanking periods.

136. (original) The method of claim 135, wherein the integral number of blanking periods corresponds to the number of graphics processors participating in the flip animation mode.

137. (original) The method of claim 135, wherein the integral number of blanking periods corresponds to the number of local frame buffers participating in the flip animation mode.

138-140. (canceled)

141-176. (canceled)

177. (new) An apparatus for processing image data to produce an image for covering an image area, comprising:

a plurality of graphics processors, each graphics processor being operable to render the image data into frame image data and to store the frame image data in a respective local frame buffer;

a control processor operable to provide instructions to the plurality of graphics processors;

one or more merge units operable to synchronously receive the frame image data from the respective local frame buffers and to synchronously produce combined frame image data based thereon, wherein at least one of the one or more merge units is

operable to produce a merge synchronization signal used by the graphics processors to release the frame image data from the respective local frame buffers to the one or more merge units;

means for transmitting the entire combined frame image data to a single display;

wherein the single display displays the entire combined frame image data on its image area;

at least one synchronization unit operable to receive the merge synchronization signal from the at least one merge unit; and

respective local synchronization units coupled to the graphics processors and operable to receive the merge synchronization signal and to cause the release of the frame image signal from the local frame buffer to the at least one merge unit.

178. (new) An apparatus for processing image data to produce an image for covering an image area, comprising:

a plurality of graphics processors, each graphics processor being operable to render the image data into frame image data and to store the frame image data in a respective local frame buffer;

a control processor operable to provide instructions to the plurality of graphics processors;

one or more merge units operable to synchronously receive the frame image data from the respective local frame buffers and to synchronously produce combined frame image data based thereon, wherein at least one of the one or more merge units is operable to produce a merge synchronization signal used by the graphics processors to release the frame image data from the respective local frame buffers to the one or more merge units, wherein the merge synchronization signal is synchronized in accordance with a display protocol defining how respective frames of the combined frame image data are to be displayed,

wherein the display protocol defines at least one of a frame rate at which successive frames of the combined frame image data are displayed, and a blanking period that dictates when the combined frame image data is to be refreshed and wherein the merge synchronization signal includes transitions that are proximate to ends of the blanking periods such that the at least one merge unit initiates producing the combined frame image data for display at the end of at least one of the blanking periods; and

means for transmitting the entire combined frame image data to a single display;

wherein the single display displays the entire combined frame image data on its image area.

179. (new) An apparatus for processing image data to produce an image for covering an image area, comprising:

a plurality of graphics processors, each graphics processor being operable to render the image data into frame image data and to store the frame image data in a respective local frame buffer;

a control processor operable to provide instructions to the plurality of graphics processors;

one or more merge units operable to synchronously receive the frame image data from the respective local frame buffers and to synchronously produce combined frame image data based thereon, wherein at least one of the one or more merge units is operable to produce a merge synchronization signal used by the graphics processors to release the frame image data from the respective local frame buffers to the one or more merge units; and

means for transmitting the entire combined frame image data to a single display;

wherein the single display displays the entire combined frame image data on its image area;

the plurality of graphics processors are grouped into respective sets of graphics processors;

the one or more merge units include a respective local merge unit coupled to each set of graphics processors, and a core merge unit coupled to each local merge unit;

the respective local merge units are operable to synchronously receive the frame image data from the respective local frame buffers and to synchronously produce local combined frame image data based thereon; and

the core merge unit is operable to synchronously receive the local combined frame image data from the respective local merge units and to synchronously produce the combined frame image data based thereon.

180. (new) A method for processing image data to produce an image for covering an image area, comprising:

rendering the image data into frame image data using a plurality of graphics processors;

storing the frame image data in respective local frame buffers;

synchronously merging the frame image data from the respective local frame buffers to synchronously produce combined frame image data based thereon;

transmitting the entire combined frame image data to a single display;

displaying the entire combined frame image data on the image area of the single display; and

producing a merge synchronization signal used by at least some of the plurality of graphics processors to synchronously release the frame image data from the respective local frame buffers for merging,

wherein the merge synchronization signal is synchronized in accordance with a display protocol defining how respective frames of the combined frame image data are to be displayed, wherein the display protocol defines at least one of a frame rate at which successive frames of the combined frame image data are displayed, and a blanking period that dictates when the combined frame image data is to be refreshed, and wherein the merge synchronization signal includes transitions that are proximate to ends of the blanking periods such that the combined frame image data are available for display at the end of at least one of the blanking periods, and wherein the transitions of the merge synchronization signal are substantially coincident with the ends of the blanking periods.

181. (new) A method for processing image data to produce an image for covering an image area, comprising:

rendering the image data into frame image data using a plurality of graphics processors;

storing the frame image data in respective local frame buffers;

synchronously merging the frame image data from the respective local frame buffers to synchronously produce combined frame image data based thereon;

transmitting the entire combined frame image data to a single display; and

displaying the entire combined frame image data on the image area of the single display,

wherein the graphics processors can operate in one or more modes that affect at least one of (i) timing relationships between when image data are rendered, when frame image data are released from respective local frame buffers, and when frame image data are merged; and (ii) how the frame image data are merged to synchronously produce the combined frame image data, and

wherein at least one of the modes provides that:

one or more of the graphics processors completes rendering the image data into the respective frame buffers prior to the end of each blanking period;

one or more of the graphics processors completes rendering the image data into the respective frame buffers prior to the end of an integral number of blanking periods; and

one or more of the graphics processors includes an integral number of local frame buffers and that the one or more graphics processors completes rendering the image data into the respective integral number of frame buffers prior to the ends of a corresponding integral number of blanking periods.

182. (new) A method for processing image data to produce an image for covering an image area, comprising:

rendering the image data into frame image data using a plurality of graphics processors;

storing the frame image data in respective local frame buffers;

synchronously merging the frame image data from the respective local frame buffers to synchronously produce combined frame image data based thereon;

transmitting the entire combined frame image data to a single display; and

displaying the entire combined frame image data on the image area of the single display,

wherein the graphics processors can operate in one or more modes that affect at least one of (i) timing relationships between when image data are rendered, when frame image data are released from respective local frame buffers, and when frame image data are merged; and (ii) how the frame image data are merged to synchronously produce the combined frame image data, and

wherein at least one of the modes is a flip animation mode providing that: (i) the local frame buffers of at least two graphics processors include frame image data that are capable of covering the image area; and (ii) the method further comprises producing the combined frame image data by sequentially releasing the respective frame image data from the at least two graphics processors.

183. (new) A method for processing image data to produce an image for covering an image area, comprising:

rendering the image data into frame image data using a plurality of graphics processors;

storing the frame image data in respective local frame buffers;

synchronously merging the frame image data from the respective local frame buffers to synchronously produce combined frame image data based thereon;

transmitting the entire combined frame image data to a single display;

displaying the entire combined frame image data on the image area of the single display;

wherein the graphics processors can operate in one or more modes that affect at least one of (i) timing relationships between when image data are rendered, when frame image data are released from respective local frame buffers, and when frame image data are merged; and (ii) how the frame image data are merged to synchronously produce the combined frame image data;

receiving at least one of a frame of the combined frame image data and at least one externally provided frame of frame image data;

transmitting the at least one of a frame of the combined frame image data and the at least one externally provided frame of frame image data to at least one of the plurality of graphics processors such that (i) at least one of the successive frames

of frame image data from one or more of the graphics processors may include at least one of the at least one externally provided frame of frame image data and the frame of the combined frame image data; and

producing a successive frame of the combined frame image data based on the at least one of the at least one externally provided frame of frame image data and the frame of the combined frame image data.